

WHAT IS CLAIMED IS:

1. An image sensor laminated with a light receiving unit for converting light into electric charge at a light receiving pixel region in which a plurality of light receiving pixels are arranged and a signal reading unit for reading electric charge generated at the light receiving unit as a signal, said light receiving unit comprising:

a plurality of lower electrodes separated from each other at respective of the light receiving pixels;

a photoelectric conversion layer; and

an upper electrode common to the light receiving pixels, said image sensor further comprising:

a lead-out terminal formed at a layer different from a layer of the upper electrode;

wherein the upper electrode is connected to the lead-out terminal on a light incident side at outside of the light receiving pixel region.

2. The image sensor according to claim 1:

wherein the lead-out terminal is connected to a second lead-out terminal comprising a starting film the same as a starting film of the lower electrodes.

3. The image sensor according to claim 1:

wherein the signal reading unit includes select lines inputted with signals for selecting the light receiving pixels for reading signals; and

wherein the lead-out terminal is connected to either of the select lines and a second lead-out wiring comprising a starting film the same as a starting film of the select lines.

4. The image sensor according to claim 1:

wherein the signal reading unit includes select lines inputted with signals for selecting the light receiving

pixels for reading signals;

wherein the lead-out terminal is connected to a second lead-out terminal comprising a starting film the same as a starting film of the lower electrodes; and

wherein the second lead-out terminal is connected to a third lead-out wiring comprising a starting film the same as a starting film of the select lines.

5. The image sensor according to claim 1:

wherein the signal reading unit includes signal lines for outputting read signals; and

wherein the lead-out terminal is connected to a second lead-out wiring comprising a starting film the same as a starting film of the signal lines.

6. The image sensor according to claim 1:

wherein the signal reading unit includes signal lines for inputting read signals;

wherein the lead-out terminal is connected to a second lead-out terminal comprising a starting film the same as a starting film of the lower electrodes; and

wherein the second lead-out terminal is connected to a third lead-out wiring comprising a starting film the same as a starting film of the signal lines.

7. The image sensor according to claim 1 wherein the photoelectric conversion layer is patterned with the upper electrode as a mask.

8. The image sensor according to claim 1 wherein the signal reading unit is constituted by a thin film transistor.

9. An image sensor integrated type active matrix type display device which is an active matrix type display device comprising over a same substrate:

a display matrix having a plurality of pixel electrodes, a plurality of select lines and a plurality of

signal lines, wherein said select lines and said signal lines are arranged in a shape of a lattice; and

an image sensor laminated with a light receiving unit for converting light into electric charge and a signal reading unit for reading the electric charge generated at the light receiving unit as a signal in a light receiving pixel region in which a plurality of light receiving pixels are arranged;

wherein the light receiving unit includes a plurality of lower electrodes separated from each other at respective of the light receiving pixels, a photoelectric conversion layer and an upper electrode common to the light receiving pixels;

wherein the upper electrode is connected to a lead-out terminal on a light incident side;

wherein the lead-out terminal is formed at a layer different from a layer of the upper electrode.

10. The image sensor integrated type active matrix type display device according to claim 9 wherein the lead-out terminal is formed by a starting film the same as a starting film of the pixel electrodes.

11. The image sensor integrated type active matrix type display device according to claim 9 wherein the lead-out terminal is connected to a second lead-out terminal comprising a starting film the same as a starting film of either of the select lines and the signal lines.

12. An image sensor integrated type active matrix type display device which is an active matrix type display device comprising over a same substrate:

a display matrix having a plurality of pixel electrodes, a plurality of active elements connected to said pixel electrodes respectively, a plurality of select lines and a plurality of signal lines, wherein said select lines

and said signal lines are arranged in a shape of a lattice;
and

an image sensor laminated with a light receiving unit for converting light into electric charge and a signal reading unit for reading the electric charge generated at the light receiving unit as a signal in a light receiving pixel region in which a plurality of light receiving pixels are arranged;

wherein the display matrix includes an electrode layer covering at least the signal lines and the select lines;

wherein the light receiving unit includes a plurality of lower electrodes separated from each other at respective of the light receiving pixels and formed by a starting film the same as a starting film of the electrode layer, a photoelectric conversion layer and an upper electrode common to the light receiving pixels;

wherein the upper electrode is connected to a lead-out terminal on a light incident side;

wherein the lead-out terminal is formed at a layer different from a layer of the upper electrode.

13. The image sensor integrated type active matrix type display device according to claim 12 wherein the lead-out terminal is formed by a starting film the same as a starting film of the pixel electrodes.

14. The image sensor integrated type active matrix type display device according to claim 12 wherein the lead-out terminal is connected to a second lead-out terminal comprising a starting film the same as a starting film of either of the select lines and the signal lines.

15. The image sensor integrated type active matrix type display device according to claim 12 wherein the lead-out terminal is connected to a second lead-out terminal comprising a starting film the same as a starting film of

the electrode layer.

16. The image sensor integrated type active matrix type display device according to claim 12 wherein the lead-out terminal is connected to a second lead-out terminal comprising a starting film the same as the starting film of the electrode layer and the second lead-out terminal is connected to a third lead-out terminal comprising a starting film the same as a starting film of either of the select lines and the signal lines.

17. An image sensor integrated type active matrix type display device which is an active matrix type display device comprising over a same substrate:

a display matrix having a plurality of pixels, a plurality of select lines and a plurality of signal lines, wherein said select lines and said signal lines are arranged in a shape of a lattice; and

an image sensor laminated with a light receiving unit for converting light into electric charge and a signal reading unit for reading the electric charge generated at the light receiving unit as a signal in a light receiving pixel region in which a plurality of light receiving pixels are arranged, said pixel matrix comprising:

active elements formed over the substrate and connected to the signal lines and the select lines;

a first insulating film covering the active elements;

an electrode layer formed on the first insulating film and covering at least the signal lines and the select lines;

a second insulating film formed on the electrode layer; and

pixel electrodes formed on the second insulating film and connected to the active devices, said image sensor comprising:

the signal reading unit formed on the substrate;

the first insulating film covering the signal reading unit;

a plurality of lower electrodes formed on the first insulating film, comprising a starting film the same as a starting film of the electrode layer and separated from each other at respective of the light receiving pixels;

a photoelectric conversion layer formed on the lower electrodes;

an upper electrode formed on the photoelectric conversion layer and common to the light receiving pixels;

the second insulating film covering the upper electrode; and

a lead-out terminal formed on the second insulating film and connected to the upper electrode;

wherein the upper electrode is formed by a starting film the same as a starting film of the pixel electrodes.

18. The image sensor integrated type active matrix type display device according to claim 17 wherein the lead-out terminal is connected to a second lead-out terminal comprising a starting film the same as a starting film of either of the select lines and the signal lines.

19. The image sensor integrated type active matrix type display device according to claim 17 wherein the lead-out terminal is connected to a second lead-out terminal comprising a starting film the same as a starting film of the electrode layer.

20. The image sensor integrated type active matrix type display device according to claim 17 wherein the lead-out terminal is connected to a second lead-out terminal comprising a starting film the same as the starting film of the electrode layer and the second lead-out terminal is connected to a third lead-out terminal comprising a starting film the same as a starting film of either of the select

lines and the signal lines.

21. The image sensor integrated type active matrix type display device according to claim 9 wherein peripheral circuits connected to the signal reading unit are installed on the substrate and the lead-out terminal is formed to surround at least portions of a periphery of the light receiving matrix excluding portions thereof connected to the peripheral circuits.

22. The image sensor integrated type active matrix type display device according to claim 12 wherein peripheral circuits connected to the signal reading unit are installed on the substrate and the lead-out terminal is formed to surround at least portions of a periphery of the light receiving matrix excluding portions thereof connected to the peripheral circuits.

23. The image sensor integrated type active matrix type display device according to claim 17 wherein peripheral circuits connected to the signal reading unit are installed on the substrate and the lead-out terminal is formed to surround at least portions of a periphery of the light receiving matrix excluding portions thereof connected to the peripheral circuits.

24. The image sensor integrated type active matrix type display device according to claim 9 wherein the photoelectric conversion layer is patterned with the upper electrode as a mask.

25. The image sensor integrated type active matrix type display device according to claim 12 wherein the photoelectric conversion layer is patterned with the upper electrode as a mask.

26. The image sensor integrated type active matrix type display device according to claim 17 wherein the photoelectric conversion layer is patterned with the upper

electrode as a mask.

27. The image sensor integrated type active matrix type display device according to claim 9 wherein the signal reading unit is formed by thin film transistors.

28. The image sensor integrated type active matrix type display device according to claim 12 wherein the active elements and the signal reading unit are formed by thin film transistors.

29. The image sensor integrated type active matrix type display device according to claim 17 wherein the active elements and the signal reading unit are formed by thin film transistors.

2025-10-10 14:55:55